예제로 쉽게 배우는 Ansys Motion

4. Gripper

Contents

tSNE

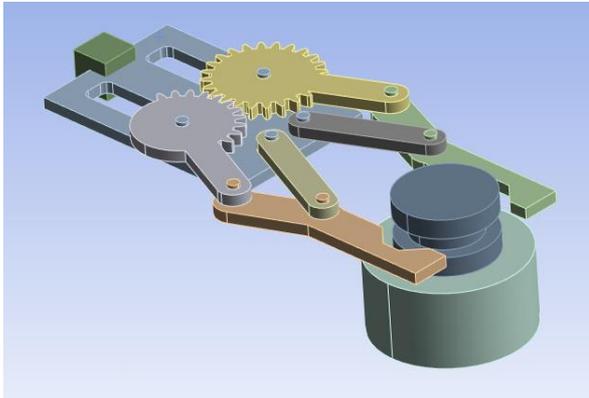# 1. 개요

1. 개요

목표

Workbench환경의 Ansys Motion으로
Dummy Body를 활용하여 Plate를
X와 Z 방향 각각 이동시켜 Object를
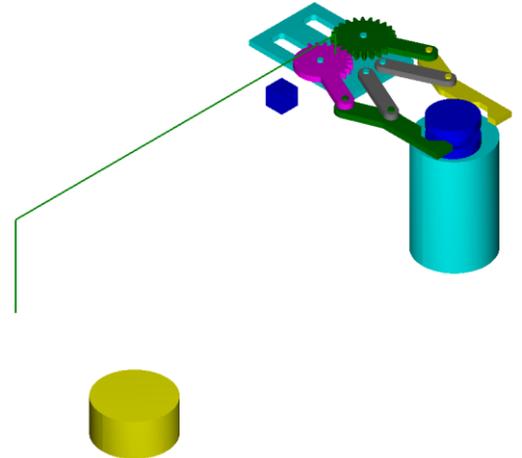운반한다.

모델의 구성 요소

1. Body Type
   - Rigid Part : 11EA

2. Joint
   - Fixed Joint : 2EA
   - Revolute Joint : 8EA
   - Translational Joint : 2EA

3. Contact
   - Frictional Contact : 4EA

4. Coupler
   - Coupler : 1EA

5. Input Condition
   - Displacement : 3EA

해석 결과

Dummy Body의 활용으로 Plate가
원하는 이동 경로를 따라 이동하고,
기어는 Coupler 조인트로 구속되어
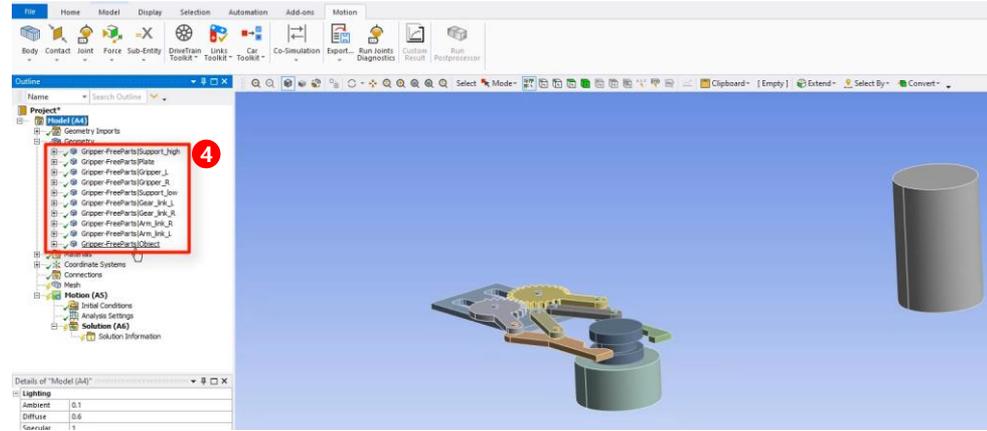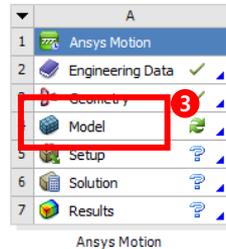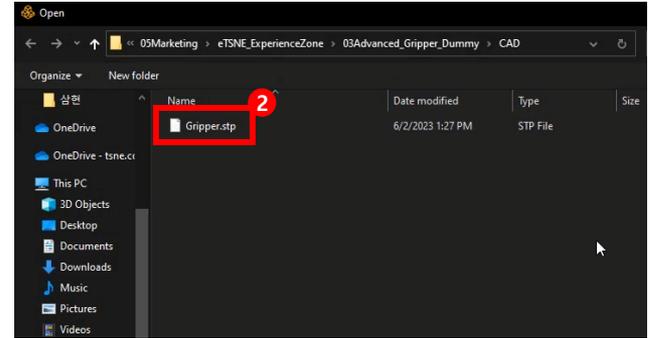Gripper가 Object를 효과적으로 고정한다.

2. 전처리

Body
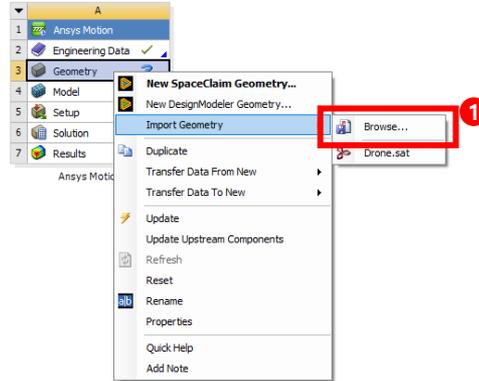
1. **CAD Import 하기**
   - **Geometry** 우 클릭
   - **Import Geometry** 클릭
   - **Browse** 클릭

2. **WS05_ValveCam.sat** 선택

3. **Model** 더블 클릭

4. 생성된 **Body** 확인하기

Connections

1. **Fixed Joint**
   - **Ground to Support_low**

2. **Fixed Joint**
   - **Ground to Support_high**
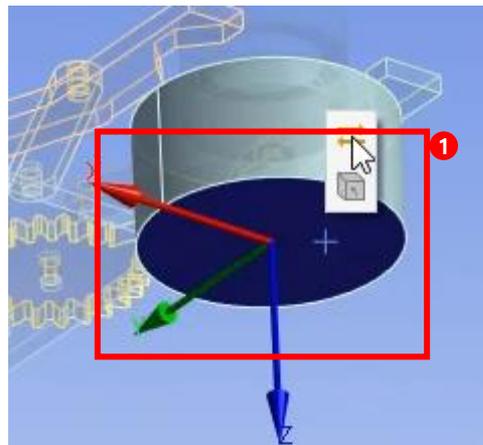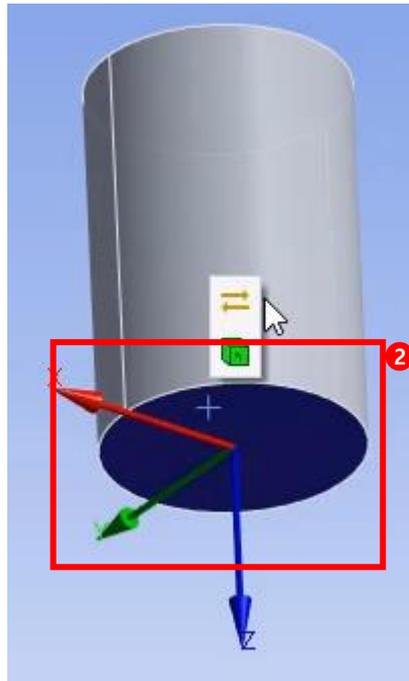
Connections

1. **Revolute Joint**
   - **Plate & Gear_link_R**

2. **Revolute Joint**
   - **Plate & Gear_link_L**

3. **Revolute Joint**
   - **Gripper_R & Gear_link_R**

4. **Revolute Joint**
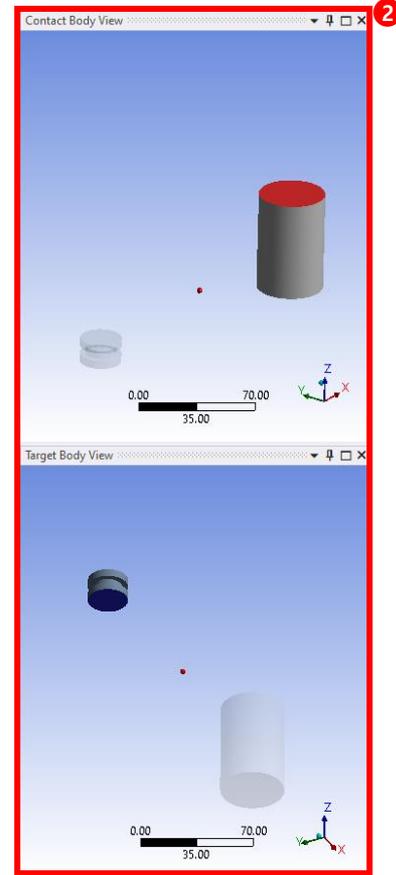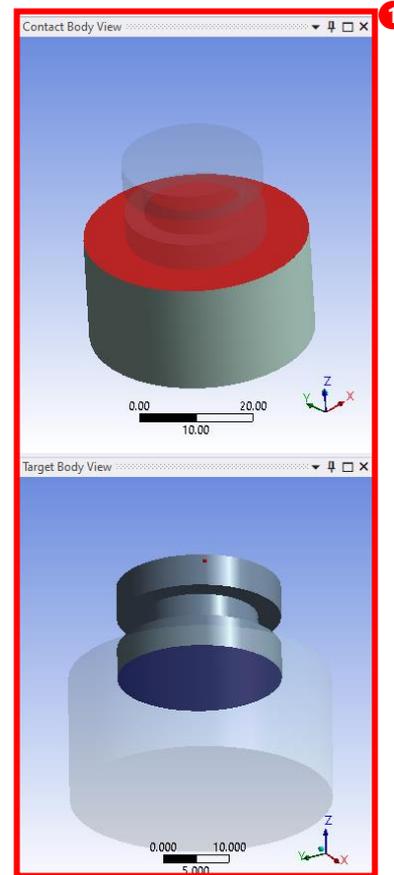   - **Gripper_L & Gear_link_L**
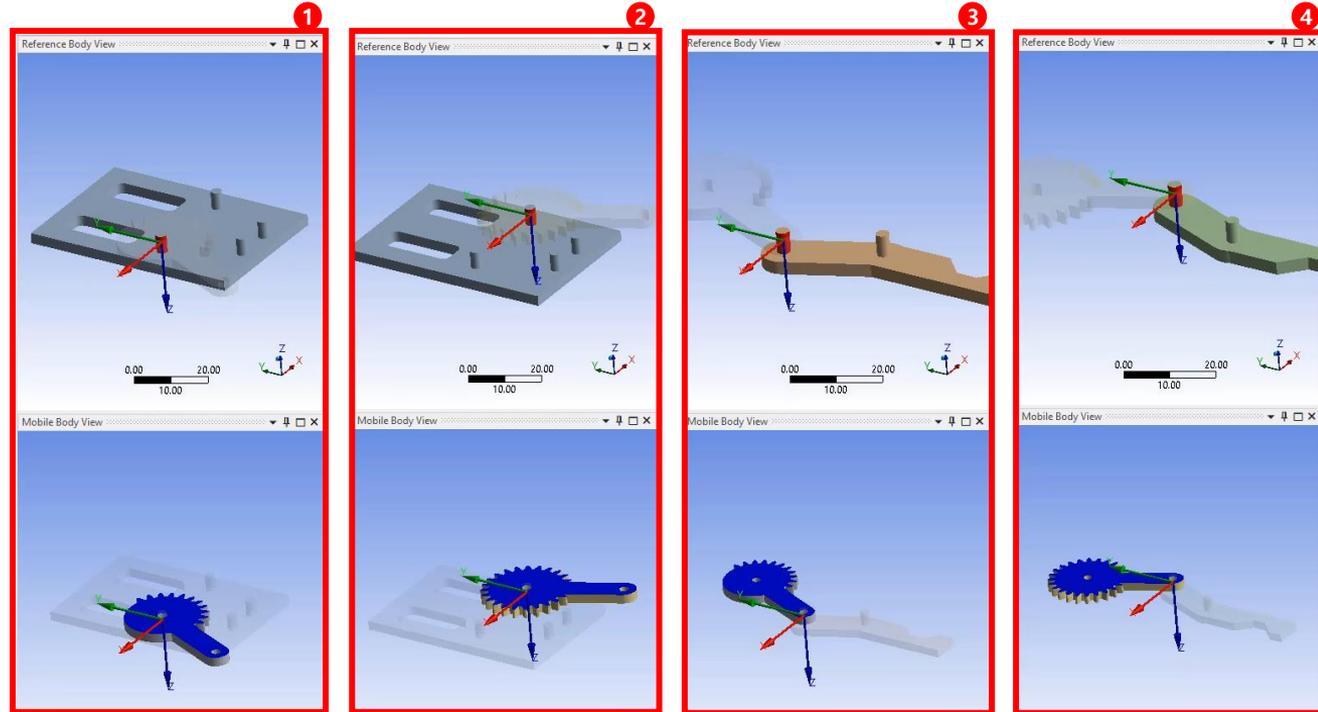
Connections

1. **Revolute Joint**
   - Plate & Arm_link_R

2. **Revolute Joint**
   - Plate & Arm_link_L

3. **Revolute Joint**
   - Gripper_R & Arm_link_R

4. **Revolute Joint**
   - Gripper_L & Arm_link_L
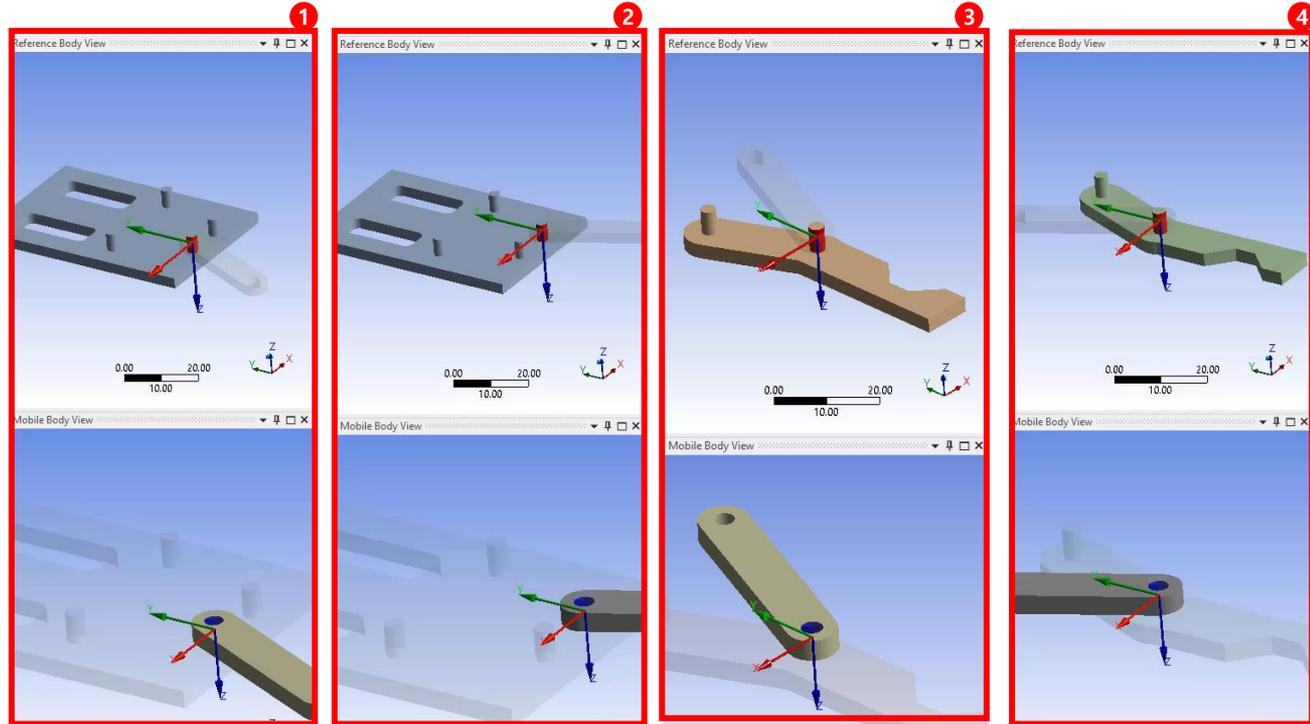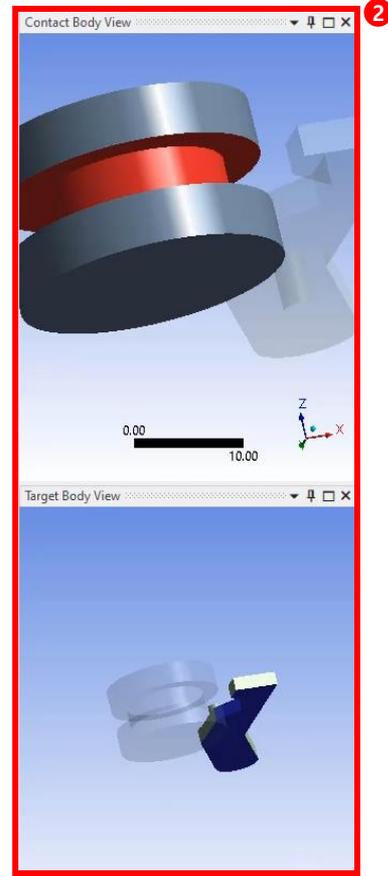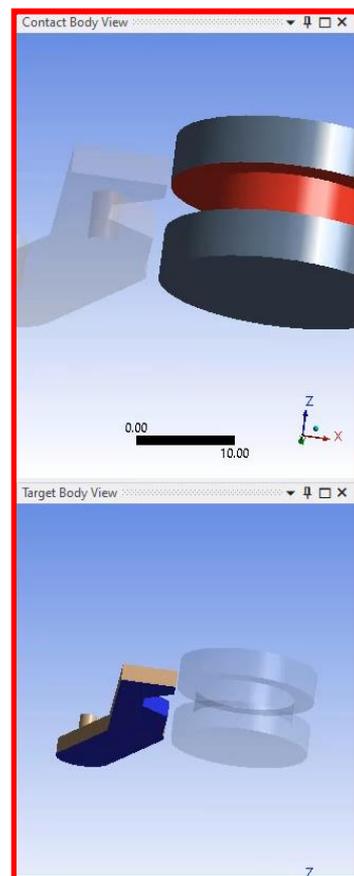
Contact

1. **Frictional Contact 생성하기**
   - **Support_low & Object**

2. **Frictional Contact 생성하기**
   - **Support_high & Object**

Contact

1. **Frictional Contact 생성하기**
   - **Gripper_R & Object**
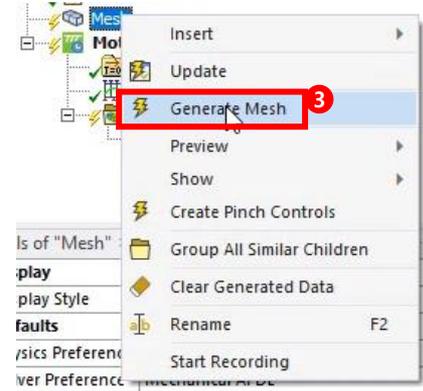
2. **Frictional Contact 생성하기**
   - **Gripper_L & Object**

Mesh

1. **Mesh 생성하기**

2. **Element Size : 1mm**

3. **Generate Mesh**

Dummy Body

1. **Coordinate System 생성**

2. **위치 지정**
   - **Plate의 면 선택**

2. 전처리

Dummy Body

1. Model 우클릭

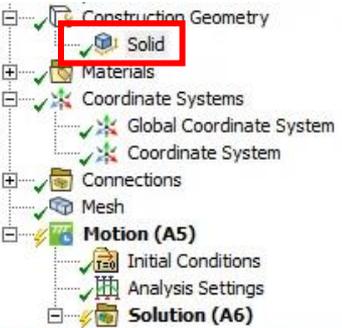2. Solid 생성

3. Coordinate System 선택

Dummy Body

1. **각 변의 길이 정의**

   - X1 : 5mm

   - X2 : -5mm

   - Y1 : 5mm

   - Y2 : -5mm

   - Z1 : 5mm

   - Z2 : -5mm

2. **Add to Geometry**

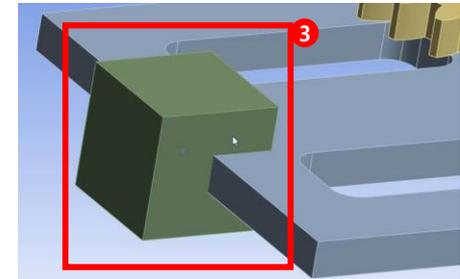3. **생성된 Solid Body 확인**
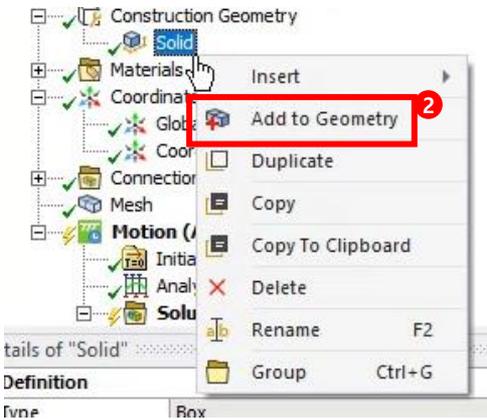
Dummy Body

1. **Solid Body 물성 정의**
   - **Structural Steel**

Translational Joint

1. **Translation Joint 생성 (글로벌 X 방향)**
   - **Reference : Ground**
   - **Mobile : Solid**

2. **Translation Joint 생성 (글로벌 Z 방향)**
   - **Reference : Solid**
   - **Mobile : Plate**
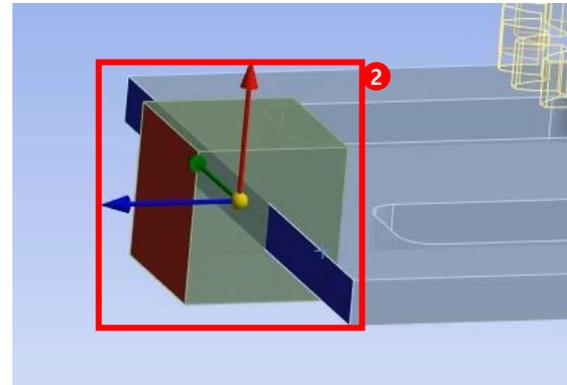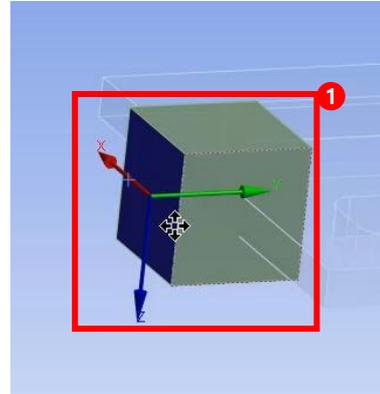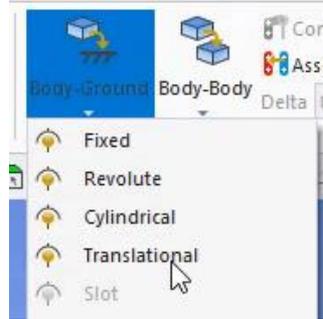
Function Expression

1. **Function Expression 생성하기 (3 EA)**

   - **Trans_X**

   - **Trans_Z**

   - **Rotation**
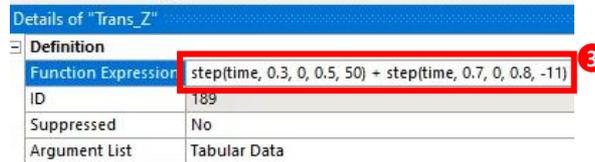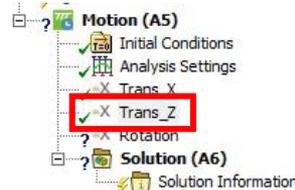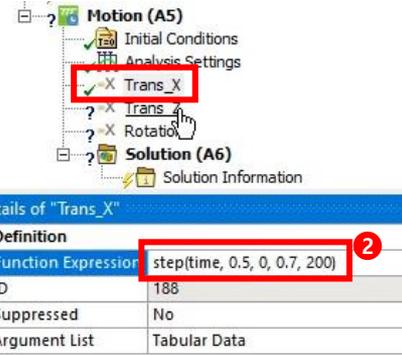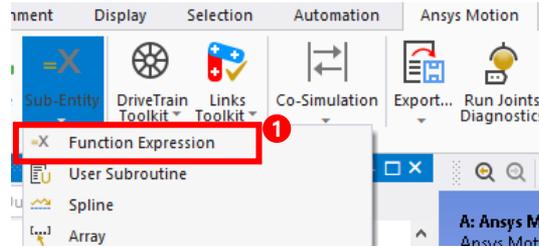
2. **Trans_X의 수식 입력**

   : **step(time, 0.5, 0, 0.7, 200)**

3. **Trans_Z의 수식 입력**

   : **step(time, 0.3, 0, 0.5, 50)**

   + step(time, 0.7, 0, 0.8, -11)

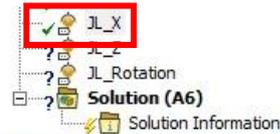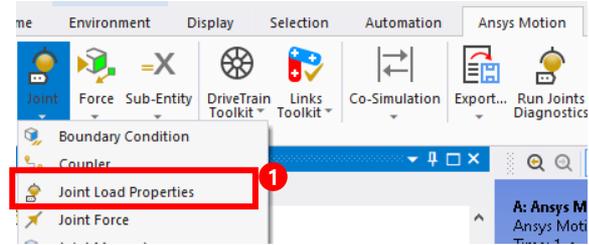4. **Rotation의 수식 입력**

   : **Step(time, 0, 0, 0.2, 15d)**

   + step(time, 0.8, 0, 0.9, -15d)
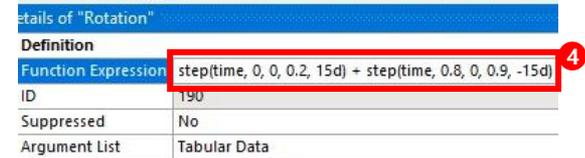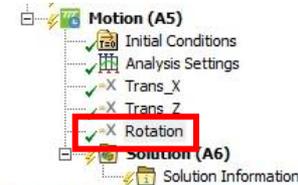
Joint Load Properties

1. **Joint Load Properties 생성하기 (3 EA)**
   - **JL_X**
   - **JL_Z**
   - **JL_Rotation**

2. **JL_X의 조건 정의**
   - **Translational Ground to Solid**
   - **Motion Function**
   - **Displacement**
   - **Function Expression**
   - **Trans_X**

Joint Load Properties

3. **JL_Z의 조건 정의**
   - **Translational Solid to Plate**
   - **Motion Function**
   - **Displacement**
   - **Function Expression**
   - **Trans_Z**

4. **JL_Rotation의 조건 정의**
   - **Revolute Plate to Gear_link_L**
   - **Motion Function**
   - **Rotation**
   - **Function Expression**
   - **Rotation**

Coupler

1. **Coupler 생성**

2. **대상 Joint 선택**
   - **Driver : Plate to Gear_link_R**
   - **First Coupled : Plate to Gear_link_L**

3. 해석 & 후처리

Solve

1. **Solution의 Total Deformation 생성**

2. **Solve 실행**